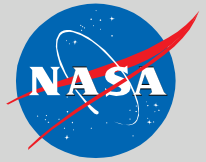
National Aeronautics and Space Administration



CERES Education and Outreach Update

Lin Chambers, EPO SD Lead NASA LaRC, Hampton, VA

The S'COOL - MY NASA DATA Team:

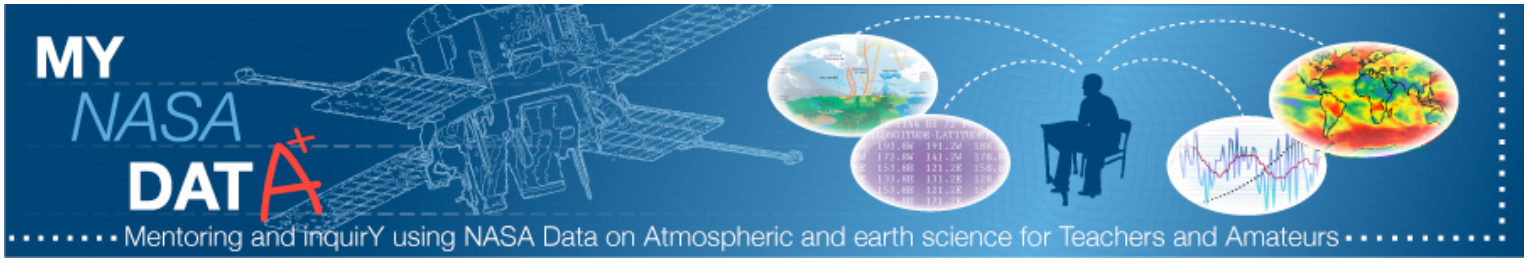
Educators, Graphic Artists, Writers, Editors, Programmers, DBAs, Managers, Systems Admins, Translators (SSAI STARS II)

Brian Bresina
Camelia Deller
Damien Josset
Daniel Oostra
Jay Madigan
Jennifer Lapan
Karen Brown
Katie Bethea
Kristina Ruhlman
Penny Oots
Preston Lewis
Sarah Crecelius
Susan Moore
Tim Marvel
Tina Coleman
Tina Rogerson

https://mynasadata.larc.nasa.gov
https://scool.larc.nasa.gov
https://science-edu.larc.nasa.gov
Email us at: scool@lists.larc.nasa.gov or mynasadata@lists.larc.nasa.gov

National Aeronautics and Space Administration

MY NASA DATA: Overview



- Involve students in real science.
- Enable K-12 teachers and students, as well as citizen scientists, to explore the large volumes of data that NASA collects about the Earth from space.
- *Students use scientific inquiry and math skills as they access and display microsets of the Earth System.*

MY NASA DATA Provides access to CERES:

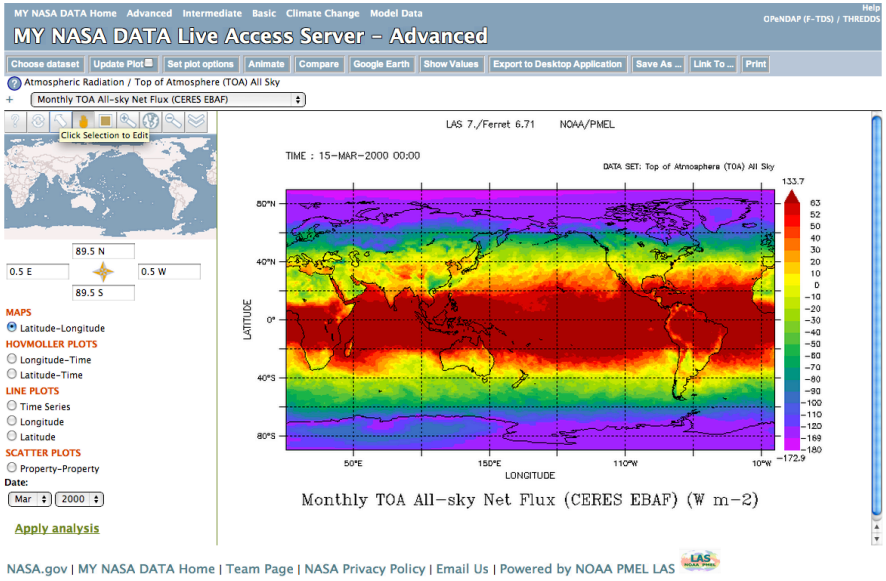
Lessons
Projects/Ideas
Data Visualization
Workshops/Training
Partnership with Educators

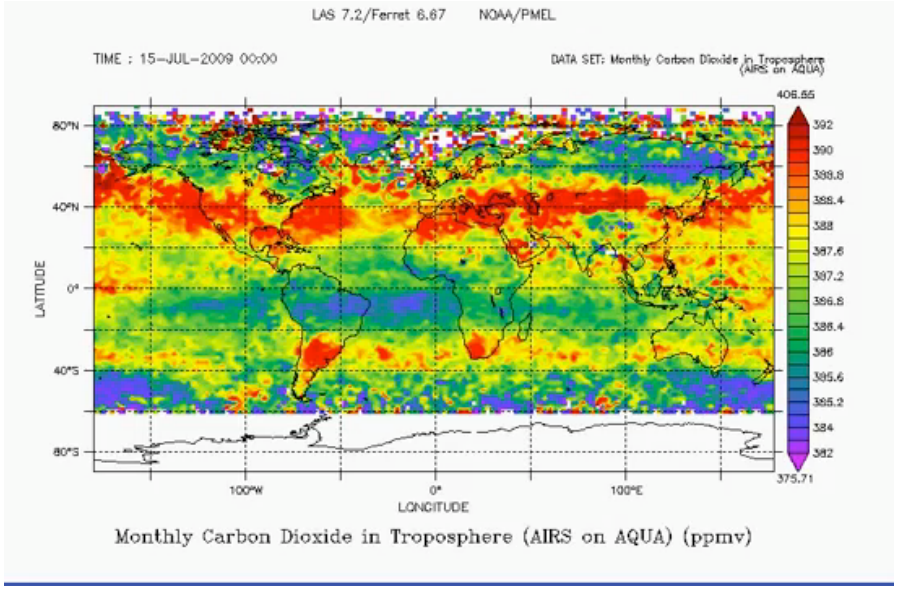
Educational Resources
A Climate Education Portal
Cross-mission EPO tool
Access to Scientists
A True Scientific Experience

National Aeronautics and Space Administration

Live Access Server

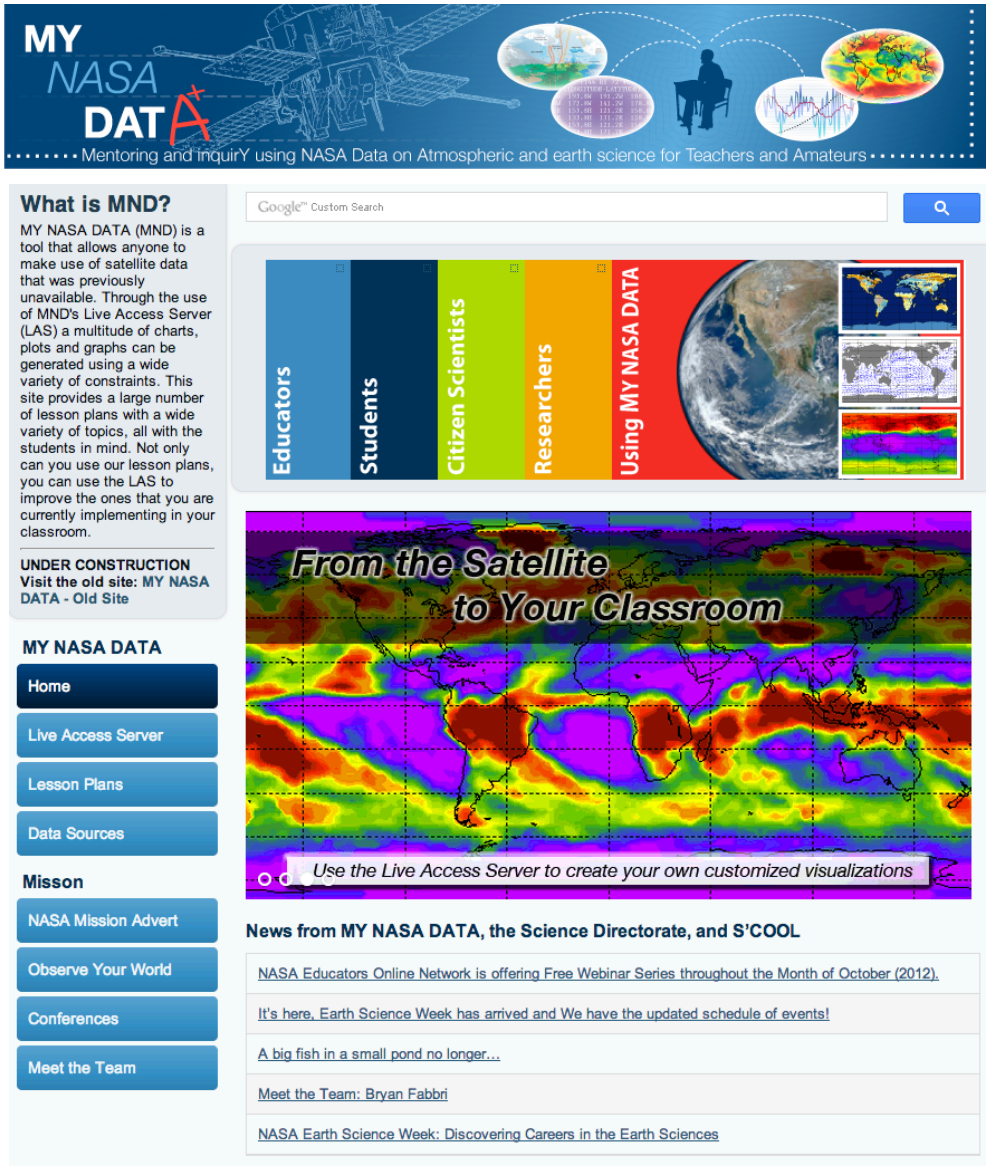
- CERES Data Visualization
- New CALIPSO, AMSR-E, MISR Data
- New Depth/Animations Functions
- Over 60 new parameters added, and more on the way





National Aeronautics and Space Administration

MY NASA DATA Website Make Over



60 likes, 20 +1's in under a week

MY NASA DATA(MND) has a new look!
The MND team has worked hard to put a new spin on data visualization, science concepts, and educational resources.

- **Easy to navigate**
- **Accessible**
- **Geared towards the user**

When you visit our site you can discover and enjoy the resources that are most relevant to your needs. Content is divided into 5 main categories:

- **Educators (3 grade divisions/ related content)**
- **Students (3 grade divisions/ related content)**
- **Citizen Scientists**
- **Researchers**
- **Using MND**

National Aeronautics and Space Administration

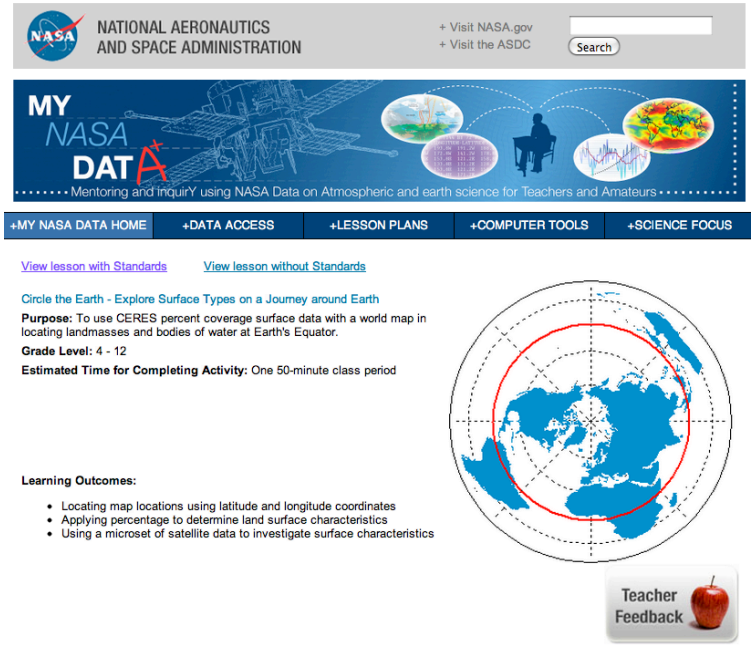
MY NASA DATA: CERES, Aqua, and Terra

- Lessons ~30
- Projects
- Multi-media
- Data
- Live Access Server
- Albedo, Fluxes (EBAF & TRMM)
- Surface Scene Type
- CO2 AIRS on AQUA

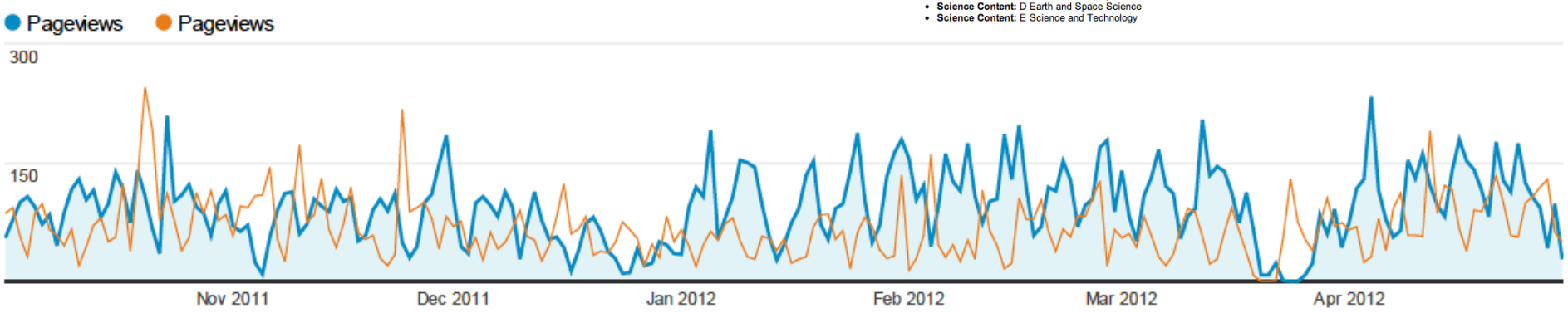
Pageviews

38.51%

20,009 vs 14,446

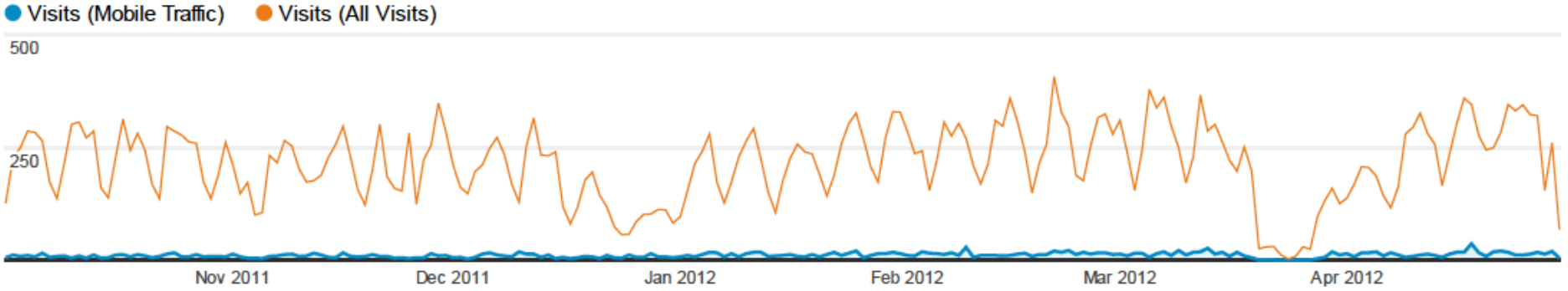


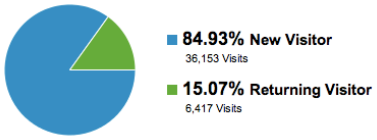
Lesson Content: Current vs. Last Period

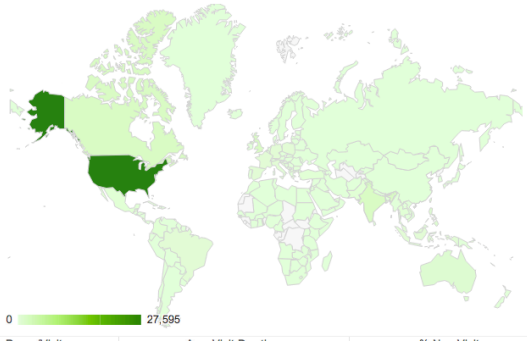


National Aeronautics and Space Administration

MND Metrics – FY2012





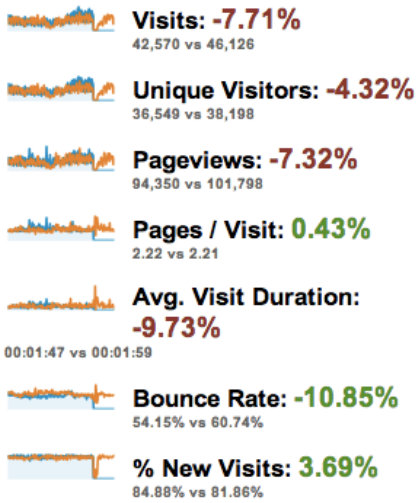


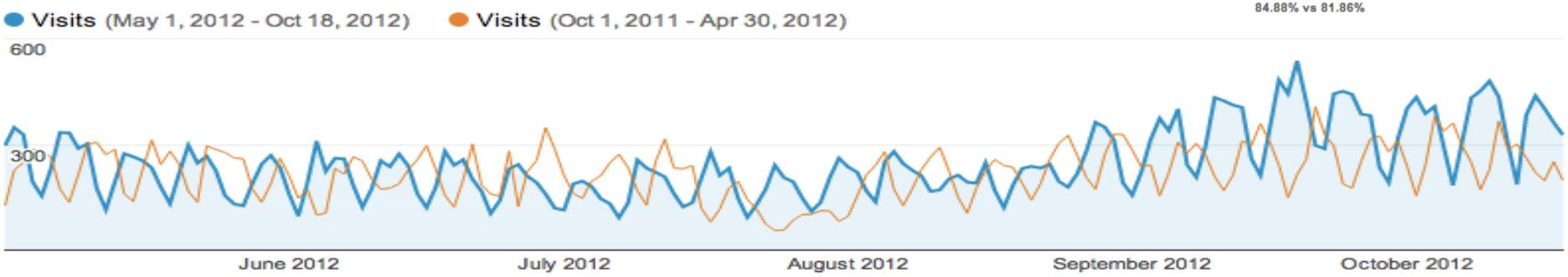
Visits

Mobile Traffic: **2,229**

All Visits: **45,897**

1. US
2. India
3. Canada
4. UK
5. Australia





National Aeronautics and Space Administration

Student Cloud Observations Online (S'COOL)

- Education and Public Outreach arm of CERES
- Backbone of Terra/Aqua formal education effort
- A simple way to involve K-12 students in authentic science
- A source of validation data for the CERES cloud retrievals

http://scool.larc.nasa.gov

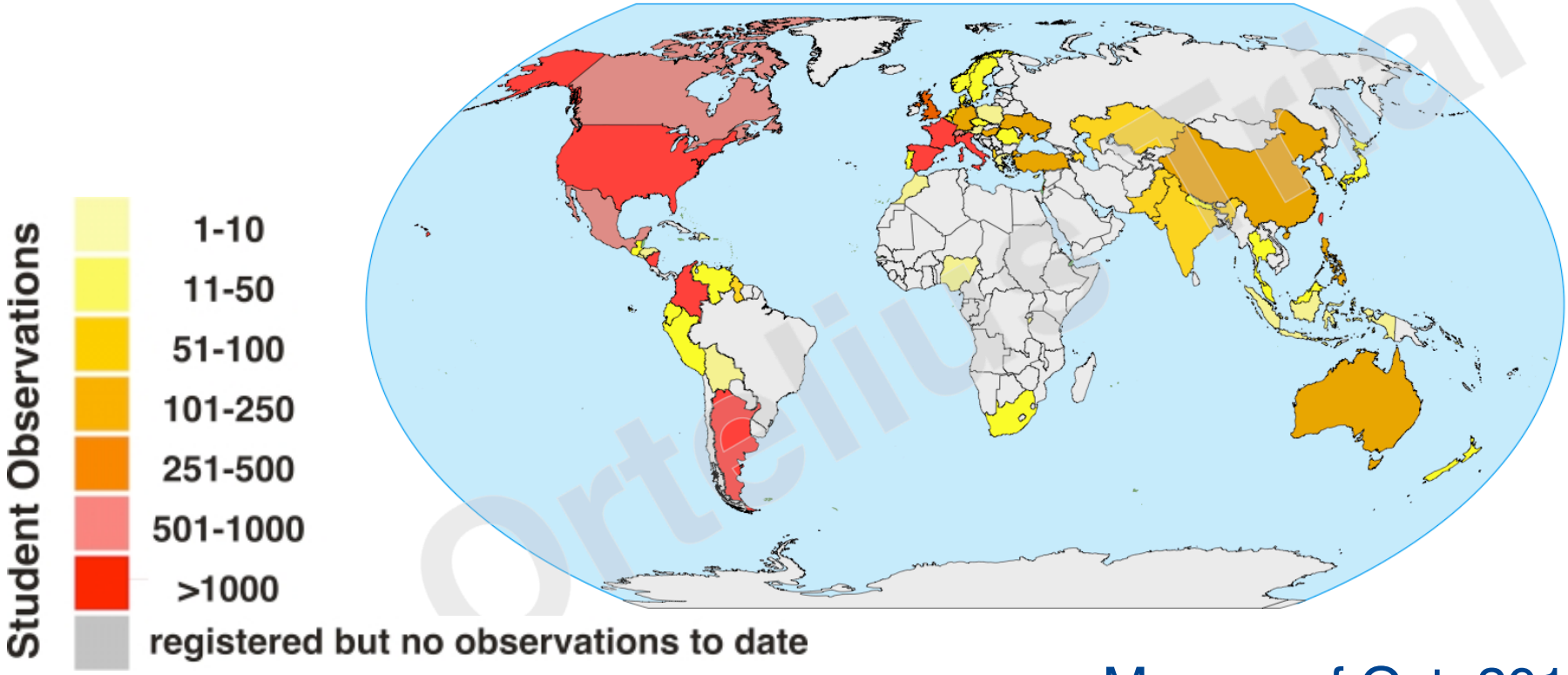
National Aeronautics and Space Administration

S'COOL Project Statistics

- > 111,500 observations from 63 countries and all 50 states

New countries participation (Rover): Nigeria, Malaysia, and Honduras

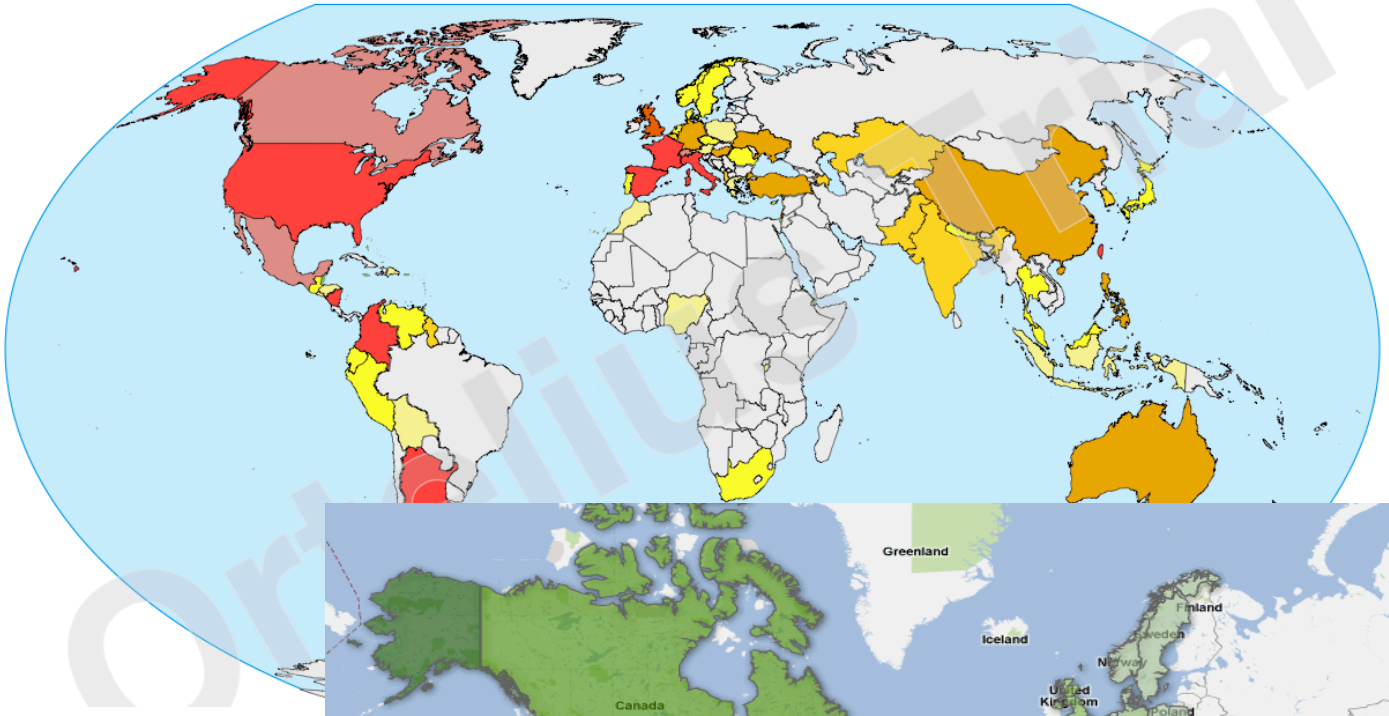
- 76% of S'COOL participants are from USA, 47% of our collected observations are from the US
- > 3,710 registered participants from 83 countries



Map as of Oct. 2012

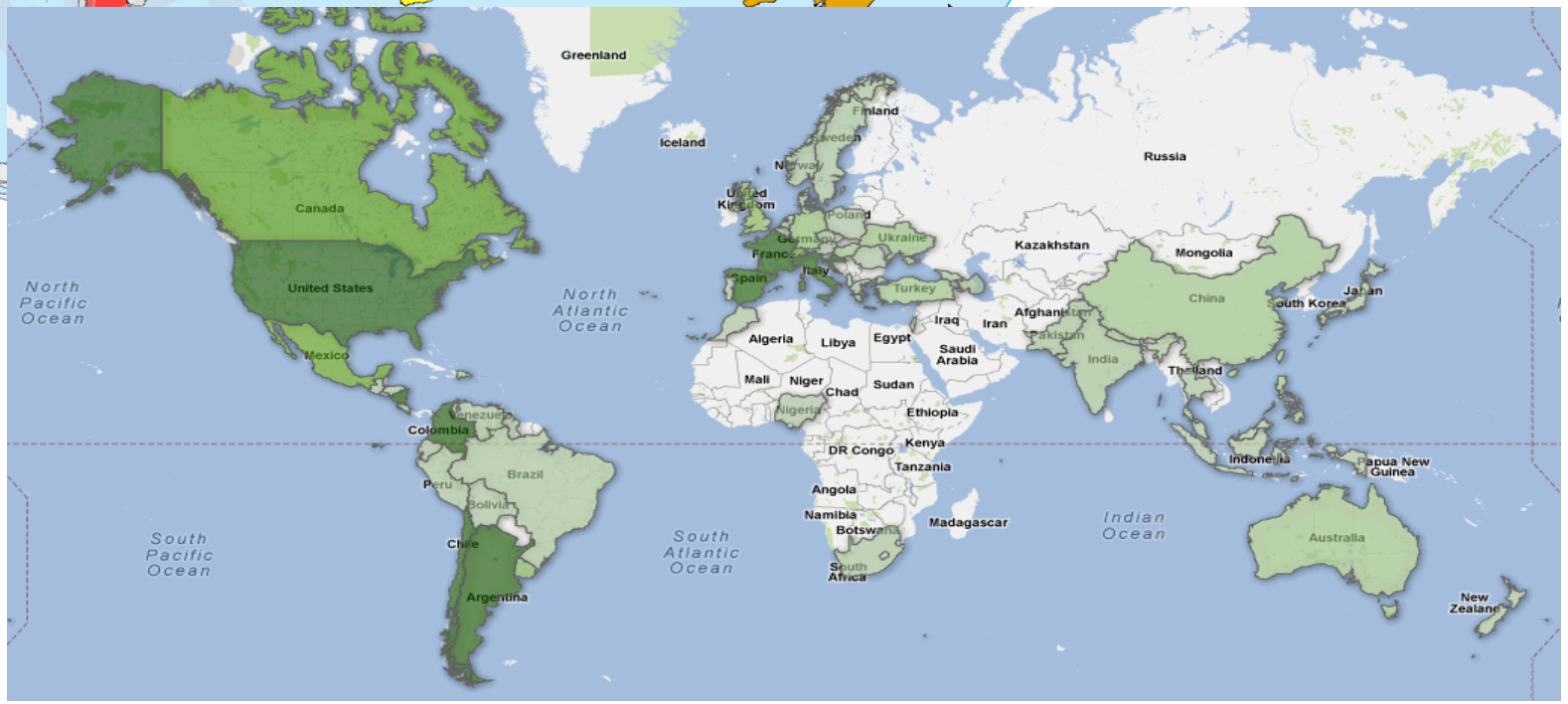
National Aeronautics and Space Administration

S'COOL Project Statistics



Left: Ortelius Software

Below: Google fusion Tables



National Aeronautics and Space Administration

Impact Measures

States "Top Five"

- PA 12%
- VA 4%
- CA 3%
- PR 2%
- NH 2%

Countries "Top Five"

- USA 50% ↑
- Colombia 25% ↑
- Argentina 5%
- France 4% ↓
- Nicaragua 4%

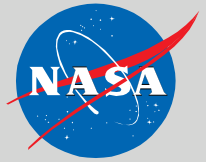
States "Bottom Five"

- North Dakota 14
- DC 13
- Virgin Islands 9
- Guam 6
- Northern Marianas 0

Stats This Year

- **S'COOL Registrations 312**
- **ROVER Recommendations 39**
- **Material 36**

*States, no change since last meeting



Database of observations - as of April 29, 2012

- > 63,000 satellite correspondences (963 match both)

  For 56% of ground observations

- > 3,710 registered participants

  35% submitted data

- 83 countries

  - data from 63 countries (75%)

- Recent feature: S'COOL has already begun collecting NPP data for comparison; 1,386 ground observations where NPP was selected as the satellite passing over

National Aeronautics and Space Administration

S'COOL Metrics – FY2012

23,862 people visited this site

Visits: 56.26%
34,567 vs 22,122

Unique Visitors: 81.75%
23,862 vs 13,129

Pageviews: 133.85%
69,941 vs 29,909

Pages / Visit: 49.66%
2.02 vs 1.35

Avg. Visit Duration: 39.64%
00:02:01 vs 00:01:27

Bounce Rate: -16.50%
66.44% vs 79.57%

% New Visits: 16.52%
68.11% vs 58.45%

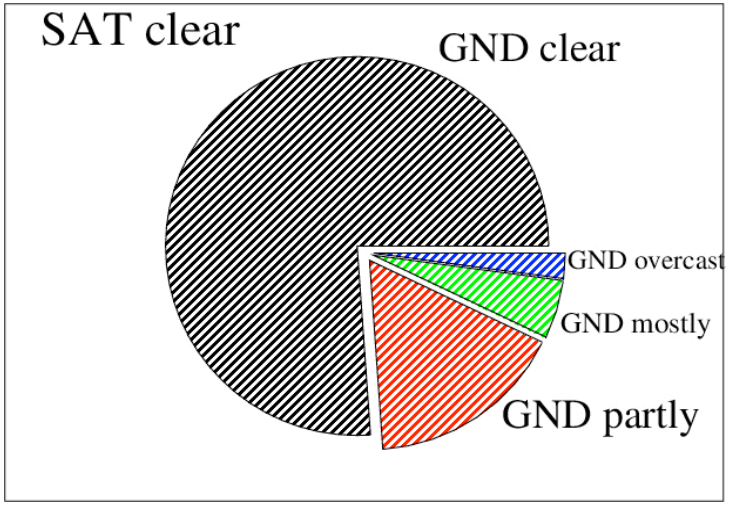
68.14% New Visitor
23,554 Visits

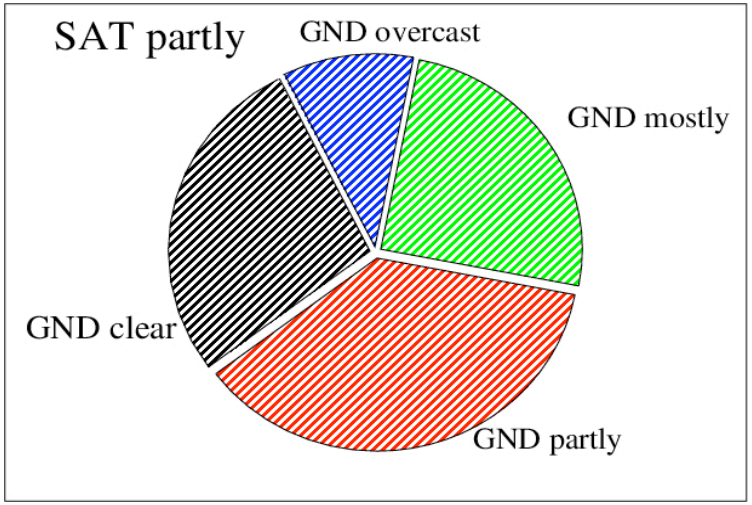
31.86% Returning Visitor
11,013 Visits

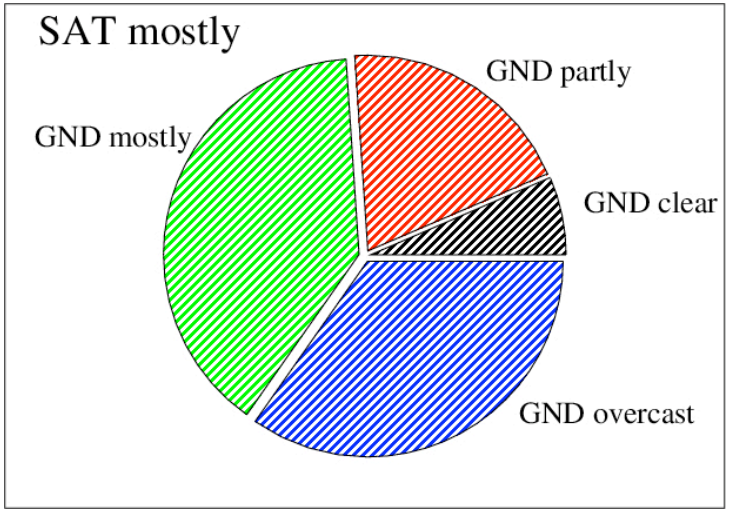
National Aeronautics and Space Administration

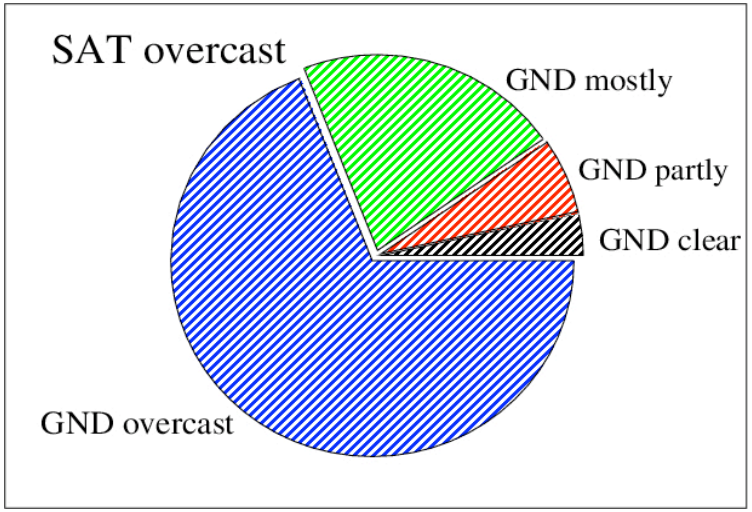
S'COOL Data Analysis

Comparison between Ground Observations and Terra Satellite data. (37997 obs.)







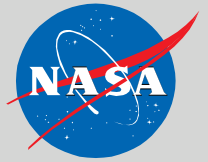


Note: SAT= Satellite results and GND = Ground Obs.

*Analysis: Alice Fan &Dr. Bing Lin

National Aeronautics and Space Administration

S'COOL Data Analysis



Comparison between Ground Observations and Terra Satellite data. (37997 obs.)

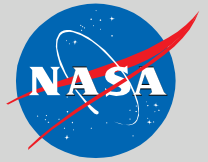
SAT \ GND	Cloud Cover	Clear (< 5%)	Partly (5-50%)	Mostly (50-95 %)	Overcast (> 95%)
	Clear (< 5%)	**5329**	1175	348	150
	Partly (5-50%)	2341	**3089**	2100	880
	Mostly (50-95%)	668	2027	**4053**	3592
	Overcast (> 95%)	424	755	2610	**8455**

*Analysis: Alice Fan &Dr. Bing Lin

- **Agreement 55% of the time**
- One Class off, 36% of the time
- Total 91%
- Consistent with our analysis from 2004

National Aeronautics and Space Administration

S'COOL Data Analysis, Next Steps



Comparison between Ground Observations and Terra Satellite data. (37997 obs.)

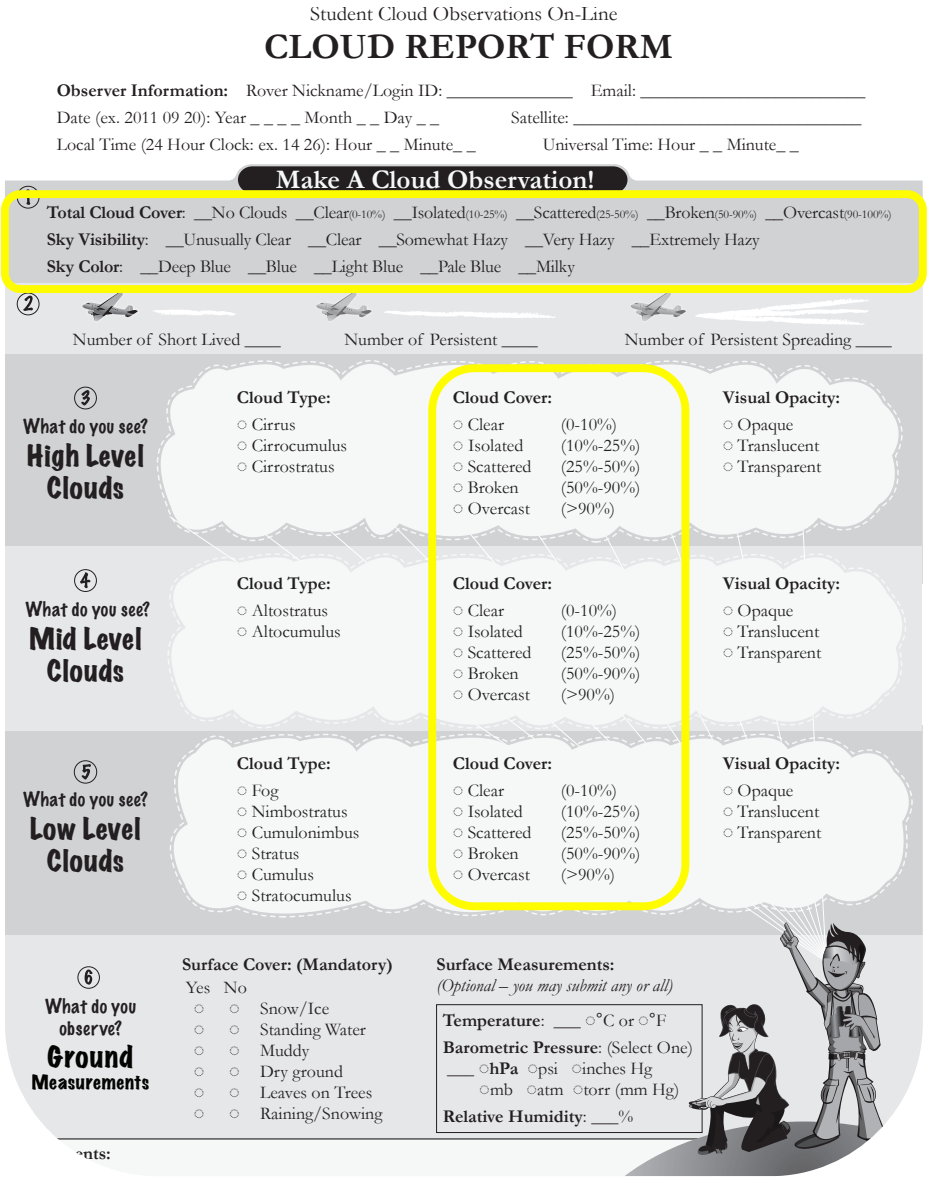
Layer Comparison	L	M	LM	H	LH	MH	LMH
GND	**44.51%**	11.43%	10.43%	9.05%	7.91%	2.41%	14.27%
SAT	9.25%	8.88%	16.89%	11.33%	1.20%	**36.67%**	15.77%

*Analysis: Alice Fan &Dr. Bing Lin

- **44.51%** of GND and **9.25%** of SAT are LOW clouds
- GND classify more low clouds and SAT classify more middle and high clouds
- Combining both provides more accurate observation

National Aeronautics and Space Administration

GLOBE Update to S'COOL Report Form



Student Cloud Observations On-Line

CLOUD REPORT FORM

Observer Information: Rover Nickname/Login ID: _____ Email: _____

Date (ex. 2011 09 20): Year _ _ _ _ Month _ _ Day _ _ Satellite: _____

Local Time (24 Hour Clock: ex. 14 26): Hour _ _ Minute_ _ Universal Time: Hour _ _ Minute_ _

Make A Cloud Observation!

① **Total Cloud Cover**: __No Clouds __Clear(0-10%) __Isolated(10-25%) __Scattered(25-50%) __Broken(50-90%) __Overcast(90-100%)

Sky Visibility: __Unusually Clear __Clear __Somewhat Hazy __Very Hazy __Extremely Hazy

Sky Color: __Deep Blue __Blue __Light Blue __Pale Blue __Milky

② Number of Short Lived ____ Number of Persistent ____ Number of Persistent Spreading ____

③ What do you see? **High Level Clouds**

Cloud Type: ○ Cirrus ○ Cirrocumulus ○ Cirrostratus

Cloud Cover: ○ Clear (0-10%) ○ Isolated (10%-25%) ○ Scattered (25%-50%) ○ Broken (50%-90%) ○ Overcast (>90%)

Visual Opacity: ○ Opaque ○ Translucent ○ Transparent

④ What do you see? **Mid Level Clouds**

Cloud Type: ○ Altostratus ○ Altocumulus

Cloud Cover: ○ Clear (0-10%) ○ Isolated (10%-25%) ○ Scattered (25%-50%) ○ Broken (50%-90%) ○ Overcast (>90%)

Visual Opacity: ○ Opaque ○ Translucent ○ Transparent

⑤ What do you see? **Low Level Clouds**

Cloud Type: ○ Fog ○ Nimbostratus ○ Cumulonimbus ○ Stratus ○ Cumulus ○ Stratocumulus

Cloud Cover: ○ Clear (0-10%) ○ Isolated (10%-25%) ○ Scattered (25%-50%) ○ Broken (50%-90%) ○ Overcast (>90%)

Visual Opacity: ○ Opaque ○ Translucent ○ Transparent

⑥ What do you observe? **Ground Measurements**

Surface Cover: (Mandatory)

Yes	No	
○	○	Snow/Ice
○	○	Standing Water
○	○	Muddy
○	○	Dry ground
○	○	Leaves on Trees
○	○	Raining/Snowing

Surface Measurements: *(Optional – you may submit any or all)*

Temperature: ___ ○°C or ○°F

Barometric Pressure: (Select One) ___ ○**hPa** ○psi ○inches Hg ○mb ○atm ○torr (mm Hg)

Relative Humidity: ___%

ents:

Updated the Report Form:

- New format
- One report form for both S'COOL and ROVER
- Addition of GLOBE components sky visibility and sky color to promote future compatibility of S'COOL and GLOBE data sets.
- New Cloud Fraction Categories.

National Aeronautics and Space Administration

Observe Your World!

Blog Highlighting the **NASA CERES S'COOL** Project, the **MY NASA DATA** Project, and the **Science Directorate Outreach** Efforts.

May 1, 2012 - Oct 18, 2012	**1,246**
Oct 1, 2011 - Apr 30, 2012	**2,126**
% Change	**-41.39%**

Pages views and visitors to the blog show the summer/ back-to-school lag. At the same time this lag has prompted an evaluation and new implementation plan for the blog.

National Aeronautics and Space Administration

S'COOL Observations on MAGIC

Marine ARM (Atmospheric Radiation Measurement) GPCI Investigation of Clouds

Observe your World

NASA Science for you: S'COOL, MY NASA DATA and the Science Directorate

Oh, Oh, it's MAGIC…

August 31, 2012

This post is also available in: Spanish

Ernie Lewis of Brookhaven National Laboratory, Warren Wiscombe of NASA's Goddard Space Flight and their team aren't referring to the 1974 Pilots hit.

MAGIC refers to the Marine ARM (Atmospheric Radiation Measurement) GPCI Investigation o (MAGIC). These two principal investigators are aiming to improve today's climate models b understanding the boundary layer clouds and related climate phenomena off the west coast United States. The Horizon Lines container ship *Spirit* will carry a group of instruments, known a between Los Angeles, California and Honolulu, Hawaii measuring properties of clo precipitation, aerosols, and radiation, and atmospheric and oceanic conditions, continuously. The r round trips will take place between October 2012 and September 2013.

Note from the PIs, "We are grateful to Horizon Lines and the Captain and crew project possible, and are excited to see what will be learned concerning marine b

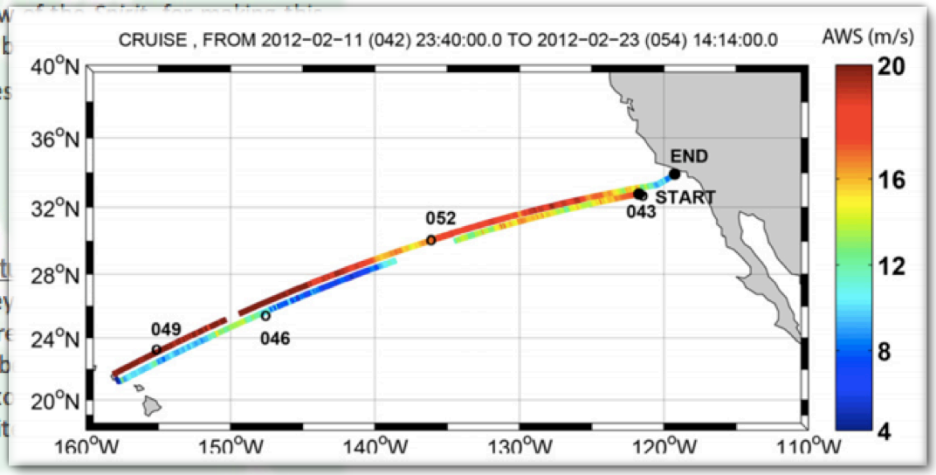
Get a first hand account and watch for more PI insights as the project progresses

For more MAGIC information and highlights please visit:

http://www.bnl.gov/envsci/ARM/MAGIC/

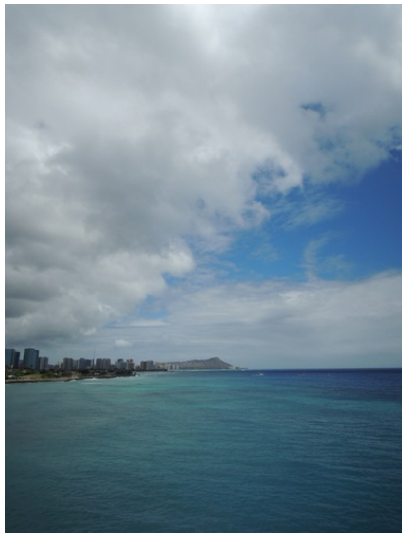
http://science-edu.larc.nasa.gov/SCOOL/Rover/

During MAGIC, the research team will be taking cloud observations for the St On-Line (S'COOL) Project. Alumni marine observer (ROVER), Mike Rey Americas, will be on board to help. A total sky imager, which takes picture document cloud fields, will be part of the AMF2 instrument group. We will b images to our S'COOL satellite data for the same place and time (similar to observers receive comparing their ground observations to corresponding satellit forward to with the start of MAGIC, stay tuned to the blog for updates!



National Aeronautics and Space Administration

S'COOL Observations on MAGIC



User Name	Age	Skill Level	Latitude	Longitude	City	State	Country
MAGIC	Adult	Expert	21.31	-157.87	HORIZON SPIRIT		USA

Ground Observation - 4785				Aqua Satellite				
Date: 2012-09-14		Local Time: 13:40:00	Universal Time: 23:30:00	Date: 2012-09-14		Universal Time: 23:42:00		
Opacity	Cloud Cover	Type	Visualization		Altitude (km)	Opacity	Cloud Cover	Phase Temp(K)
Transparent	Clear (0% to 5%)	Cirrus	High	High	6.36	Transparent 0.87	Clear (0% to 5%) 1.39	ice 266.13
Opaque	Partly Cloudy (5% to 50%)	Altostratus	Mid	Mid	2.98	Translucent 6.03	Partly Cloudy (5% to 50%) 35.95	mixed 282.26
Opaque	Partly Cloudy (5% to 50%)	Stratocumulus	Low	Low	1.62	Translucent 5.59	Partly Cloudy (5% to 50%) 23.99	water 286.63

Contrails: Persistent: 0
Short-Lived: 0

Surface Observations

Snow/Ice	Not Observed
Standing Water	Yes
Muddy	Not Observed
Dry Ground	Not Observed
Leaves on Trees	Not Observed
Raining or Snowing?	No
Temperature	26.20 C
Barometric Pressure	1012.40 hPa
Relative Humidity	55.00

Cloudsat Quick Look
Cloudsat Tutorial

CALIPSO Quick Look
CALIPSO Tutorial

Need Observation Help?

View Corresponding Satellite Images

Aqua MODIS

New! LANCE

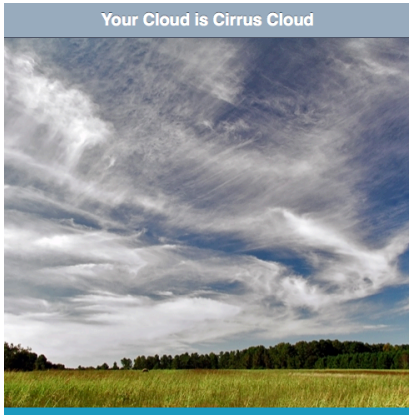
LANCE Tutorial
S'COOL MODIS Guide

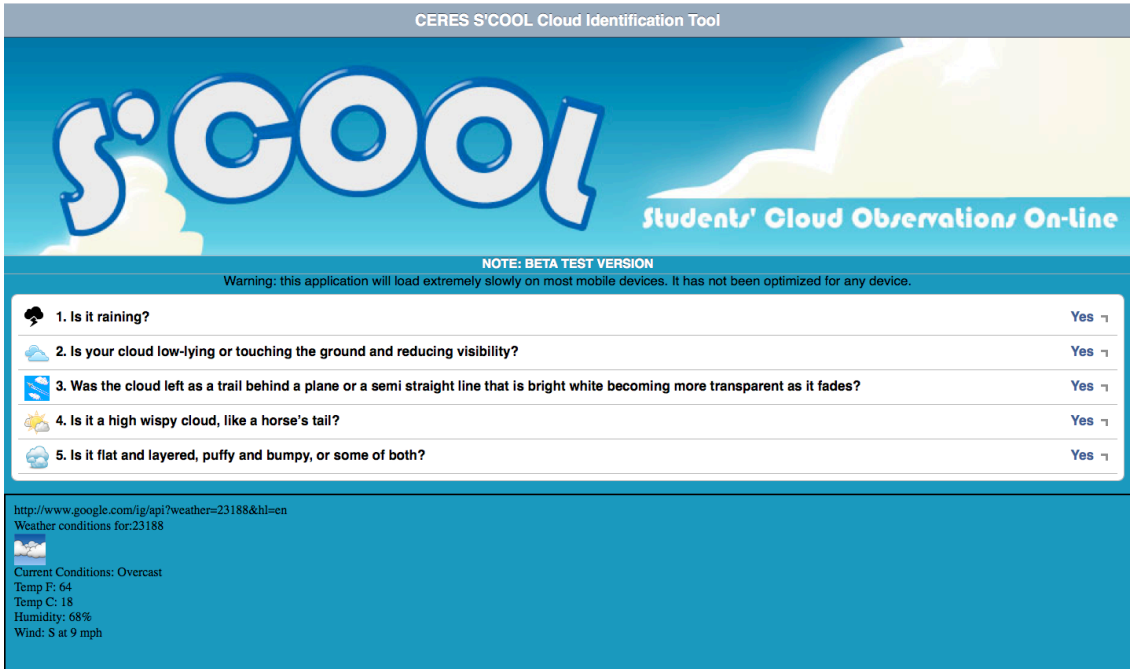
Comments: Leaving port. Clouds are clearing quickly.

National Aeronautics and Space Administration

Mobile and Web Applications

- The web is going **mobile**.
- Housed on the new redesign of science-edu pages.
- **CITRUS** – Cloud Id Tool for Students
  - Dichotomous Key
  - Cloud pic to map
  - Weather
  - Chart
  - METAR Integration
  - Picture Analysis?





National Aeronautics and Space Administration

S'COOL/MND Outreach: Ambassadors, Conferences, Workshops

NSTA Regional Conference, KY:
Ambassador-Brandon Hargis (teacher from KT) presented S'COOL and MND

NSTA Regional Conference, GA:
Team Member-Preston Lewis presenting S'COOL and MND

NSTA Regional Conference, AZ:
Team Member-Tina Rogerson presenting S'COOL and MND

Upcoming:

- Virginia Association of Science Teachers Meeting
- AISES National Conference 2012
- NSTA National Conference 2012
- AGU 2012/AGU GIFTS Teachers Workshop
- AMS National Conference 2013

American Indian Science and Engineering Society
A Universe of Opportunities

Astronomical Society of the Pacific
Advancing science literacy through astronomy

National Aeronautics and Space Administration

Outreach Involvement

- Woodrow Wilson High School (Portsmouth)
  - Teacher Professional Development
  - Student Training Workshop
- American Nicaraguan School (Nicaragua)
  - Skype, Project Overview and Instrument Introduction

Other Events:

- Provide activities/material for Science Action Club, afterschool program
- Langley 95th Open House
- Earth Science Week readings
- Astronomical Society of the Pacific
- Public Participation in Scientific Research
- NASA Explorer Schools Research Experience
- GLOBE Workshop
- LEARN Workshop

Thanks to all who participated or presented S'COOL or MND!

National Aeronautics and Space Administration

Outreach Team at the Langley 95th Open House

Thank you to the large group of SD employees who supported the NASA Langley 95th Anniversary Open House!

10,000 visitors during the Open House with **700** through the Pearl Young!

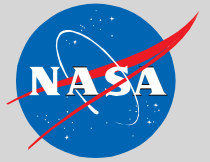
Science Directorate showcased in the Pearl Young Theater @ Langley's 95thn Open House: September 22, 2012

National Aeronautics and Space Administration

New Member to the S'COOL Team

Tina Coleman received her B.S. in Human Learning K-8 and her M.S. in Science Education with an emphasis in Earth and Space Science from the University of Tennessee at Martin. She has taught middle school science for the past fifteen years in the state of Tennessee, prior to which she taught for three years in the state of Kentucky. During the past two years she has served as President of the Tennessee Earth Science Teachers Association in addition to serving on the Tennessee State Leadership Team for the development of the Next Generation Science Standards (NGSS). Currently she is a contractor in educational outreach for the NASA LaRC Science Directorate and is working with the MY NASA DATA and S'COOL teams as education specialist focusing on the development of science curriculum resources.

We Need YOU!



- Make **S'COOL Rover** observations!
- **Present S'COOL/MND** – scripted materials available
- **Dig into Data**-new opportunity within data analysis (CALIPSO, CloudSat)
- **Translation** Services needed!
- **Serve as resource** for scientific content questions sent in by participants
- **Connect with observers** in every state and >83 countries
- **Contact** any one of the team members for posting to the blog or other information
  - scool@lists.nasa.gov or mynasadata@lists.nasa.gov